A GROUND SLOTH, MEGALONYX, FROM A PLEISTOCENE SITE IN DARKE CO., OHIO[1]

RICHARD S. MILLS

The Dayton Museum of Natural History, 2629 Ridge Ave., Dayton, Ohio

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Bones of a ground sloth, *Megalonyx jeffersonii*, were found by Mr. Lowell Carter on his farm in Darke County, Ohio and reported to the Dayton Museum of Natural History. Subsequent digging by Dayton Museum personnel resulted in recovery of 93 *Megalonyx* bones and fragments. Comparison of this specimen with other *Megalonyx* skeletons from Henderson, Kentucky, and Powers County Idaho indicates that the Darke County *Megalonyx* is larger than any other *Megalonyx* yet reported. In addition this specimen contains bones that are not represented in previously reported skeletons of *M. jeffersonii*. A radiocarbon date of 12,190±215 years B.P. was determined for a wood fragment (*Picea*) collected from marl containing sloth bones.

Fossil remains of the ground sloth, *Megalonyx*, have been reported from several Pleistocene sites in North America. At least ten species have been reported (Leidy, 1855; Lindahl, 1893; Cope, 1899; Lyon, 1938; Stovall, 1940; Stovall and McAnalty, 1950) most described from fragmentary material. The extent of variation within each species remains unknown (Scott, 1937). However, Bryan Patterson of Harvard University and David Webb of the University of Florida currently believe that *M. jeffersonii* is the only valid post-Blancan species (pers. comm. with Elaine Anderson, 1974).

Three partial *Megalonyx jeffersonii* (Desmarest) skeletons have been reported from Ohio. A partial skeleton was found on the farm of Abraham Drushell in Berlin Township, Holmes County, in shell marl beneath six feet of black peaty soil. This skeleton was reported by Claypole (1891) and later described by Hay (1912). It was reconstructed by the Ward Establishment, Rochester, New York. The mounted specimen is on display at Orton Hall, Department of Geology and Mineralogy, The Ohio State University, Columbus. Missing parts of the skeleton have been reproduced in plaster, and the entire skeleton has been painted black so it is difficult to determine the genuine from reconstructed bones. Three "leg bones", thought to be *Megalonyx*, were obtained from the Muddy Prairie Bog section 26, Amanda Township, Fairfield County, in 1949. The present location of these bones is unknown to the author. Some scattered *Megalonyx* bones were found in a hackberry swamp near North Fairfield, Huron County. These specimens are in the collections of the Norwalk Historical Museum (personal communication with Jane Forsyth, 1974).

During the summer of 1966 Mr. Lowell Carter of Ansonia, Darke County, Ohio dredged along the edge of one of the kettle bogs on his property to obtain marl lime for his fields. While spreading marl on his fields one of the large leg bones of a ground sloth became wedged in his spreading machinery. This accident led to Mr. Carter's recovery of several other *Megalonyx* bones. Later in the same year Mr. Carter was dredging another kettle in the process of constructing a fishing pond, when he uncovered the skull of an adult female mastadon. He contacted the Dayton Museum of Natural History concerning the finds, and a party from the museum visited both sites. The museum began excavations there in the summer of 1970. A report of the Carter mastadon site is in preparation.

Museum personnel and volunteers dug through dredged up marl using hand tools. In addition the Mannix Construction Co. was employed to redredge the portion of the bog from which sloth bones had been recovered. A femur, a patella, a fibula, a fifth metatarsal, two first phlanges, one second phlange, one third phlange, a complete rib, a rib midsection, a piece of vertebra, and one unidentifiable bone fragment were found following the dredging. Although Mr. Carter reported that approximately two

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feet of organic peat covered the marl, all *Megalonyx* bones and spruce (*Picea*) were found in dredged up chunks of marl.

A total of 93 *Megalonyx* bones and fragments were recovered from the site along with the bones of muskrat (*Ondatra zibethica*), Canada beaver (*Castor canadensis*), and white-tailed deer (*Odocoileus virginianus*). These specimens are in the geological collection of the Dayton Museum of Natural History. The *Megalonyx jeffersonii* skeleton was exceptionally well preserved and is one of the most complete skeletons reported of this species. In addition, some of the sloth bones in this collection are not represented in other *Megalonyx* skeletons.

SITE DESCRIPTION

The site from which the sloth bones were dredged is a kettle, or ice-block depression, formed in ground moraine (personal communication with Jane Forsyth who visited the site in 1971) two miles southwest of the Bloomer end moraine and five miles northeast of the Union City end moraine. It is located at 40° 12′ north latitude, 84° 41′ west longitude, in the S.W. ¼ section 20, Brown Township, Darke Co., Ohio (U.S.G.S. Ansonia 7½ minute quadrangle). An area of open water is bordered on the east, south and west by bog vegetation. According to Mr. Carter the north bank of the pond was boggy but is now solid due to the construction in 1964 of a dirt road along this edge. The New York Central railway line crosses the south edge of the pond; and Ohio Route 49 crosses it near the west edge.

Sloth bones were first discovered in 1966 the second time Mr. Carter dredged the north edge of the pond. Due to repeated dredging the north bank of the pond has been so disturbed that recognition of the original stratigraphy is impossible. Bones found by the field crew of the Dayton Museum of Natural History were in marl, even though they had been displaced from their original deposition site.

RADIOCARBON DATE

When sloth bones were located by the 1973 dredging, it was thought that a radiocarbon date from the marl would approximate the age of the skeleton. A wood fragment (*Picea*) was carefully removed from the dredged marl and sent to the University of Georgia Geochronology Laboratory. A date of 12,190 ± 215 years B. P. was determined for this specimen (Uga-666). This date approximates the true age of the skeleton, since both the wood and the skeleton were removed from marl.

DESCRIPTION OF THE FAUNA

Mr. Carter recovered only the largest sloth bones while spreading marl on his fields. Probably some of the smaller bones were broken up and spread with the marl. Several additional bones were found by the museum field crew in the marl. These included ribs, vertebrae, both scapulae, both patellae, a portion of pelvis, both femora, both tibiae, and several metapodials. A complete list of *Megalonyx* bones recovered from the site, including those collected by Mr. Carter, follows: partial skull and lower jaw, one cervical vertebra, nine dorsal vertebae, one lumbar vertebrae, one caudal vertebra, both scapulae, left humerus, left radius, left ulna, left clavical, seven complete ribs, 13 proximal rib ends, eight distal rib ends, nine rib midsections, both acetabulae and part of the ilium of the pelvis, both femora, both patellae, both tibiae, left fibula, one calcanium, one scaphoid, one cuniform, third, fourth, and fifth metatarsals, scapho-trapezium, unciform, magnum, lunare, pisiform, index and auricular metacarpals, four first phlanges, three second phlanges, and four third or ungual phlanges. Measurements of the Darke County sloth bones are compared with measurements of other *Megalonyx* skeletons from American Falls, Powers County, Idaho and Henderson, Kentucky in table 1.

The partial skull appears to have been damaged by the dredge just behind the cuniform aveolii. The skull was missing teeth but the second right cheek tooth (M_2) was later recovered from the marl. The premaxilla, nasals, palatine, jugal and zygomatic arch of the right side are missing. Measurements for this partial skull are in table 1, and drawings appear in figures 1 and 2.

TABLE 1

Comparison of the Darke County, Ohio Megalonyx jeffersonii *with* M. jeffersonii *from American Falls, Powers County, Idaho (personal communication with Elaine Anderson, 1973); and Henderson, Kentucky (Leidy, 1855).*

skull	D.M.N.H.* G–25699	I.S.U.M.** 23034	Henderson, Ky.
total length	340+	290+	355+
length from temporal fossa to postorbital protuberance	215	219	197
length of sagittal crest	140	109	127
breadth of inion at paramastoid	176	167	159
height of inion from foramen magnum	118	103	110
breadth of face at postorbital protuberance	150	137	127
breadth of cranium at narrowest part of temporal ridge	112	96	90
mandible	D.M.N.H. G–25700	I.S.U.M. 23034	Henderson, Ky.
total length	316	320	317
diastema length	43	46.6	42
depth of 1st alveolus	85	—	88
length of tooth row	154	146	—
width across diastema	60	55	—
length 1st cheek tooth (M_1)	19	17.3	18
width 1st cheek tooth	26	23.6	24
length 2nd cheek tooth (M_2)	18	17.4	—
width 2nd cheek tooth	26	25	—
length 3rd cheek tooth (M_2)	20	18.3	18
width 3rd cheek tooth	27	26.3	24
femur	D.M.N.H. G–25696	I.S.U.M. 23043	Henderson, Ky.
total length	615	495	546
diameter of head	130	—	120
proximal width	210	212	—
least shaft width	180	158	—
width at middle of shaft	205	—	180
breadth at middle of shaft	61	—	62
distal width	275	255	260
humerus	D.M.N.H. G–25695	I.S.U.M. 23034	Henderson, Ky.
total length	560	495	520
proximal width	154	140	—
least shaft width	66	59.4	—
width at middle of bone	88	—	85
distal width	273	245	258
width of distal condyle	142	122	—
ulna	D.M.N.H. G–25697	I.S.U.M. 23034	Henderson, Ky.
total length	540	485	500
height of glenoid cavity	92	71.2	—
least width of shaft	80	62.1	—
distal width	89	76.4	75
breadth at middle of shaft	89	—	75
radius	D.M.N.H. G–25694	I.S.U.M. 23034	Henderson, Ky.
total length	517	432	445
prox. width	78	59.5	—
least width of shaft	52	45.1	—
width at middle of shaft	85	—	81
thickness at middle of shaft	35	—	—
distal width	119	95.6	89
scapula	D.M.N.H. G–25698	I.S.U.M. 23034	Henderson, Ky.
width of glenoid fossa	75	60.7	—
least width of neck	134	130	—
index metacarpal	D.M.N.H. G–25727	I.S.U.M. 23034	Henderson, Ky.
total length	98	—	95
width	54	—	44

TABLE 1. *Continued.*

index phalanx I	D.M.N.H. G–25753	I.S.U.M. 23034	Henderson, Ky.
length	34	—	32.5
height	60	—	52.5
index phalanx II	D.M.N.H. G–25752	I.S.U.M. 23034	Henderson, Ky.
length	78	—	58.3
height	60	—	52.5
median phalanx I	D.M.N.H. G–25754	I.S.U.M. 23034	Henderson, Ky.
length	39	—	40
height	67	—	56.2
median phalanx III (ungual of forefoot)	D.M.N.H. G–25691	I.S.U.M. 23034	Henderson, Ky.
length	190	—	178
height	85	—	81
index phalanx III (?) (ungual of forefoot)	D.M.N.H. G–25758	I.S.U.M. 23034	Henderson, Ky.
length	171	—	150
height	71	—	62
median phalanx III (ungual of hindfoot)	D.M.N.H. G–25916	I.S.U.M. 23034	Henderson, Ky.
length	239	—	210
height	124	—	109
patella	D.M.N.H. G–25734	I.S.U.M. 23034	Henderson, Ky.
length	131	—	125
width	122	—	100
tibia	D.M.N.H. G–25698	I.S.U.M. 23034	Henderson, Ky.
length	426	—	370
width at proximal end	218	—	205
width at distal end	179	—	150
fibula	D.M.N.H. G–25930	I.S.U.M. 23034	Henderson, Ky.
length	375	—	350
width at proximal end	93	—	87
width at distal end	89	—	87
least diameter of shaft	30	—	31
lumbar vertebra	D.M.N.H. G–25706		
height	270		
width across body	133		
width across transverse process	286		

+All measurements are in mm.
*D.M.N.H. is Dayton Museum of Natural History.
**I.S.U.M. is Idaho State University Museum.

The lower jaw is missing the left condyloid process and all bone posterior to it. The right mandible is broken off just behind the fourth alveolus. The anterior pair of teeth (C_1) are missing, but the others are intact. Measurements for the lower jaw and its teeth are in table 1 and drawings of it appear in figure 3.

Additional vertebrate remains collected include: white-tailed deer (*Odocoileus virginianus*), distal ends of two humeri (G–25924, and G–25917), (catalogue numbers are those of the Dayton Museum of Natural History), the glenoid fossa of a scapula (G–25721) and a phalanx (G–25732); muskrat (*Ondatra zibethicus*), femur (g–25925); Canada beaver (*Castor canadensis*), two incisors (G–25962, and G–25927). These specimens were identified by John Guilday of the Carnegie Museum of Natural History, Pittsburgh, Pennsylvania. Measurements of these specimens are given in table 2.

A 3783 c.c. sample of marl was analyzed for mollusc shells. Identifications were made by comparison of specimens from the sloth site with a collection from the mastodon site identified by Aurele

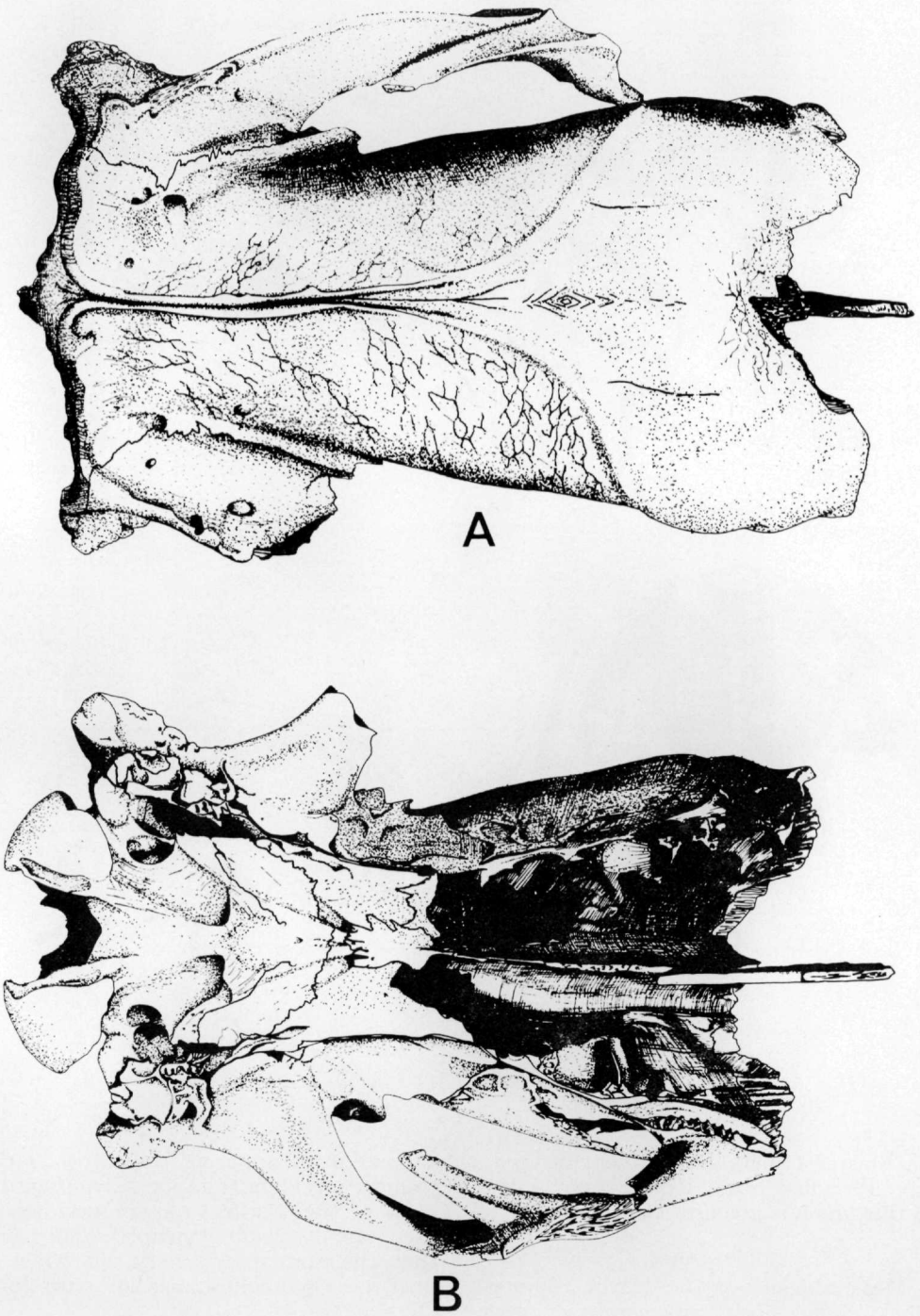

FIGURE 1. Skull of *Megalonyx jeffersonii* from Darke County, Ohio. (A) Dorsal (B) Ventral views, × 1/3.

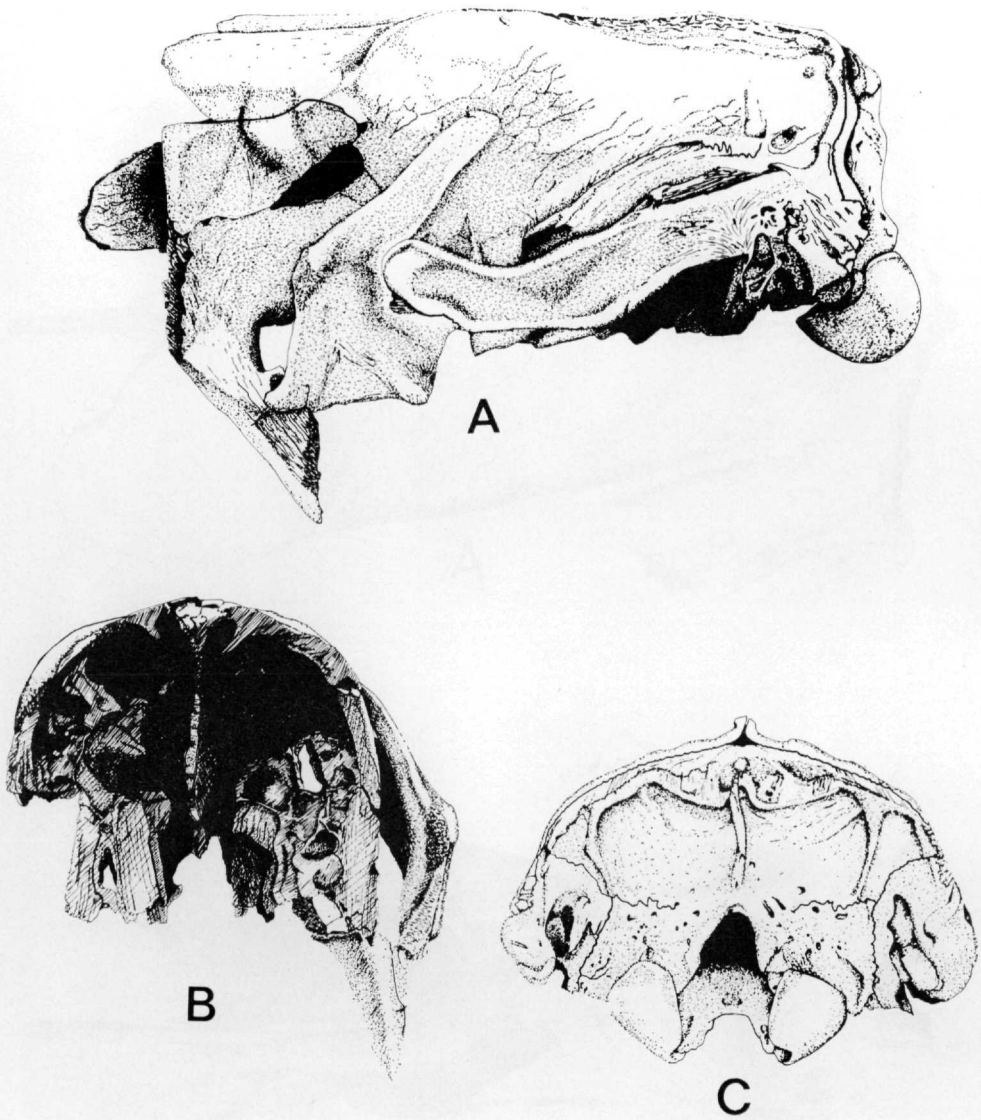

FIGURE 2. Skull of *Megalonyx jeffersonii* from Darke County, Ohio. (A) Lateral (B) Anterior (C) Posterior views, × 1/3.

La Rocque (1966), Department of Geology, the Ohio State University. A list of this fauna is given in table 3.

DISCUSSION

Measurements of the Darke County, Ohio ground sloth were compared with measurements of other *Megalonyx jeffersonii* specimens from Henderson, Kentucky, and Powers County, Idaho (table 1) and it is apparent that the Darke County specimen is larger. The saggital crest of the Darke County specimen is exceptionally well developed, indicating that the animal was very old when it died (personal communication with John Guilday, 1971).

Neither the Henderson, Kentucky or Holmes County, Ohio *Megalonyx* skeletons include lumbar vertebrae. A single

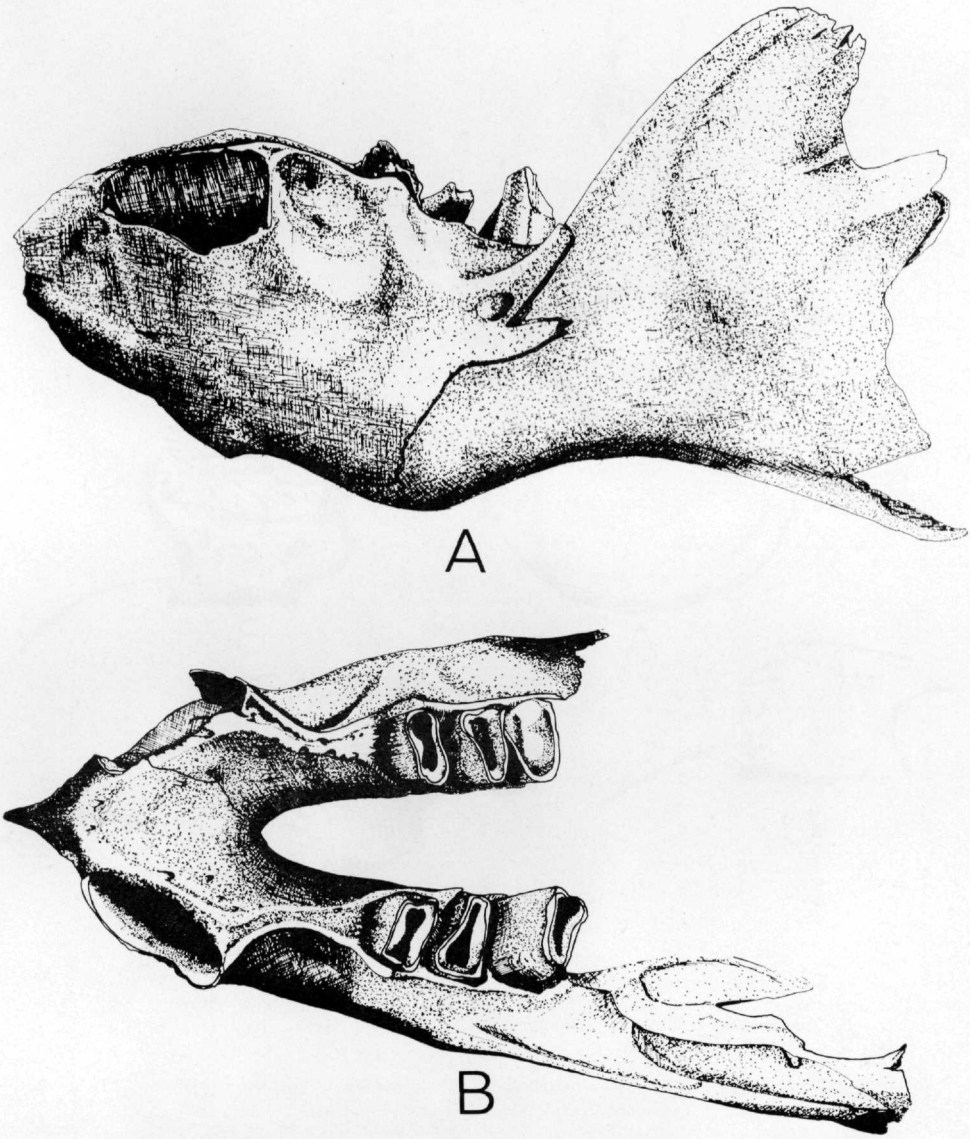

FIGURE 3. Lower jaw of *Megalonyx jeffersonii* from Darke County, Ohio. (A) Lateral (B) Occlusal views, × ⅓.

lumbar is included in the collection from Darke County (figure 4). This is the largest reported vertebra of *M. jeffersonii.*

No remains of a pelvis have been reported from partial *M. jeffersonii* skeletons. In the Darke County partial skeleton the pelvis is represented by both acetabulae and a portion of the right ilium. The acetabulum of this specimen measures 129 mm. from side to side. The ilium is too incomplete for meaningful measurements.

The partial *Megalonyx jeffersonii* skeleton obtained from the Carter farm in Drake County, Ohio is the largest, and one of the most complete skeletons described of this species.

Acknowledgments. I wish to express my appreciation to the field crew of the Dayton Museum of Natural History, who volunteered their

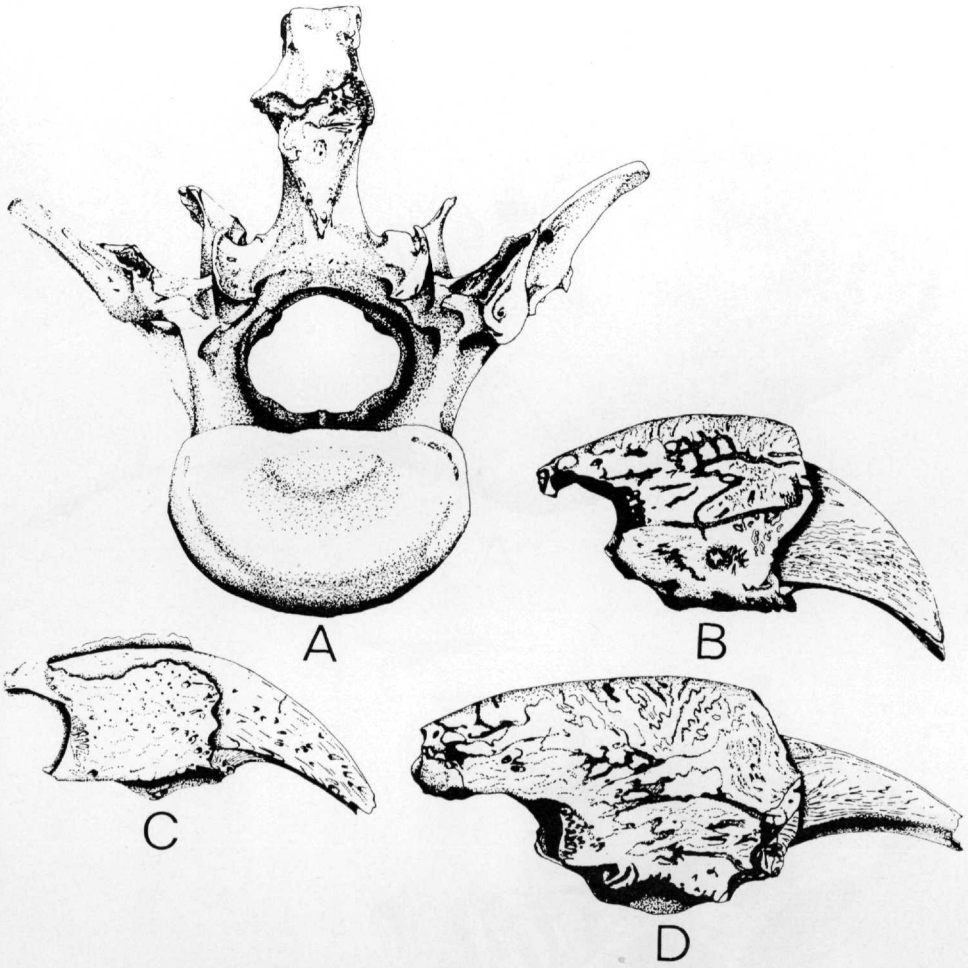

FIGURE 4. (A) Lumbar vertebra, posterior view (B) Index phalanx III, lateral view (C) Annular phalanx III, lateral view (D) Medial phalanx III, lateral view, × ⅓. *Megalonyx jeffersoniim* Darke County, Ohio.

TABLE 2

A list and measurements of bones collected in association with Megalonyx jeffersonii *from the Carter "sloth site" in Darke Co. Ohio.*

Species	Specimen	D.M.N.H. Catalogue No.	Measurements+
Castor canadensis	incisor fragment	G–25926	length—29 width—5.3
Castor canadensis	incisor fragment	G–25927	length—26.4 width—7.3
Ondatra zibethicus	femur	G–25925	length—45
Odocoileus virginianus	humerus fragment	G–25924	width across distal end—36
Odocoileus virginianus	humerus fragment	G–25917	width across distal end—36
Odocoileus virginianus	scapula fragment	G–25721	width across glenoid fossa—32
Odocoileus virginianus	phlange	G–25732	length—52

+All measurements are in mm.

TABLE 3

Molluscs collected from a 8788 c.c. marl sample, Darke Co., Ohio.

	Number of individuals	Percent of sample
Gastropoda		
Amnicola sp.	77	15
Valvata tricarinata	104	20
Gyraulus parvus	42	9
Gyraulus deflectus	15	3
Helisoma anceps	70	14
Physa cf. *heterostropha*	25	5
Promenetus exacuous	37	8
Stagnicola lanceata	11	2
Acella haldermani	2	less than 1
Fossaria sp.	2	less than 1
Mesomphix sp.	2	less than 1
Pelecypoda		
Sphaerium sp.	112	21

time and effort in making this excavation possible. Special thanks are due Holly K. Coovert for her excellent drawings, and Mr. Lowell Carter for his permission to excavate along the edge of his pond. I also wish to thank Drs. Jane Forsyth and Elaine Anderson for their assistance and advice during the excavation. This project was supported, in part, by a grant from the Ohio Biological Survey.

LITERATURE CITED

Claypole, E. W. 1891. *Megalonyx* in Holmes County, Ohio. Am. Geol. 7: 122–132.

Cope, E. D. 1899. Vertebrate remains from Port Kennedy bone deposit. Jour. Acad. Nat. Sci. Philadelphia, vol. 11, 2nd ser., pp. 193–267, pls. 18–21.

Hay, O. P. 1912. The Pleistocene mammals of Iowa. Iowa Geol. Surv. Ann. Rept. pp. 107–127.

LaRocque, A. 1966. Pleistocene mollusca of Ohio. Ohio Div. of Geol. Sur. Bull. 62 Pt. 1.

Leidy, J. 1855. A memoir on the extinct sloth tribe of North America. Smithsonian Contrib. Knowledge., June, pp. 1–68.

Lindahl, J. 1893. Description of a skull of *Megalonyx leidyi*, n. sp. Trans Am. Phil. Soc. 17: n.s., (1) pp. 1–10, pls. 1–5.

Lyon, Gretchen. 1938. *Megalonyx milleri* a new Pleistocene ground sloth from southern California. Trans. San Diego Soc. Nat. Hist. 9: 15–30.

Scott, W. B. 1937. A history of land mammals in the western hemisphere. MacMillan, New York.

Stovall, W. 1940. *Megalonyx hogani*, a new species of ground sloth from Gould, Oklahoma. Am. Jour. Sci. 238: 140–146.

——— and W. McAnalty. 1950. The vertebrate fauna and geologic age of Trinity River Terraces in Henderson County, Texas. Am. Mid. Nat. 44: 211–250.